Outcomes of spring foresight debates

Russia will set the future

Photo: TransBaltic

TransBaltic has held five foresight debates so far on the future of the Baltic region's transformation over the next two decades. The region seems likely to experience considerable growth and changes in spatial distribution of freight flows, mostly depending on what will happen in Russia.

As Jerker Sjögren – Swedish Ministry of Enterprise, Energy and Communication – said in his opening speech at the kick-off TransBaltic conference in Malmö (SE), when you think globally, what is reality today can shift dramatically tomorrow. This might well serve as a leitmotif also for the following industry experts meetings in Vilnius (LT), St. Petersburg (RU), Stockholm (SE) and Norwegian Bodø.

Greening the region

Today, there is a significant difference in experts' opinions on future transport demand. Some claim that it will increase in the next decades, while others firmly believe it will shrink due to successful persuasion or necessity to consume less. However, what the debaters have primarily accepted is that, basically, the total population is unlikely to increase in the BSR as a whole. It will probably get smaller in the West and rise in the East. The average age duration will grow and we will continue to migrate to urban agglomerations, thereby posing the rural areas under threat of becoming deserted.

It also appears that we will all be more environmentally aware and the so-called Green Scenario is the most likely future for transport in the region. Green means that the system should strive to become climate neutral. The EU sets its goal of 80% reduction in greenhouse gasses emissions by 2050 and calls for actions already now. The Green Scenario has economical, environmental and social sustainability of the transport system in its prime focus, based on co-modality, concentration of freight flows and efficient transshipment points, as well as a harmonised system of rules and safety standards. What makes a corridor green is the use of eco-friendly alternatives and techniques, so participants in the TransBaltic debates jointly stressed the necessity to implement new regulations (both within the EU and in its bordering countries) as a starting point for developing green multimodal transport corridors as a priority network in the BSR (corresponding to the present TEN-T network).

Melting ice creates an alternative

Vladimir Semenov from the Russian Academy of Science in Moscow claims that climate change may well be a chance for us, especially for marine transportation. He presented satellite data observations of the Arctic Sea ice cover conducted over the past 30 years which show even a 40% reduction in sea ice extent. This indicates that Arctic shipping may become more available in the future, and the estimated navigation season along the Northern Sea Route (NSR) can be prolonged to about 4-5 months by the end of the century (yet in 1985, the free passage was only 30 days, and today it lasts 45 days). In the summer of 2007, the route was ice-free and navigable over its entire length for the first time during the whole period of observations. A cutback in the ice season applies to a major part of the Arctic basin with the exception of its central part, still with a persistent multi-year ice cover. The strongest decrease was found in the Atlantic (Barents and Kara Seas) and eastern part of the Arctic basin close to the Bering Strait. According to Semenov, longer navigation via the northern passage can have an impact on lowering global shipping time and costs (fuel, labour, ship maintenance, etc.), and of course GHG emissions reduction.

The Northern Sea Route is 7,700 nautical miles long and can be passed in 18-20 days, while the Royal Route via the Suez Canal is 10,200 nautical miles

Vladimir Semenov, Russian Academy of Science

and takes 28-30 days. A reduced need for icebreaker escort and ice reinforcement of ships, better reliability and diminished risks should raise the commercial attractiveness of Arctic transportation compared to conventional routes, particularly as, with a potential growth in world seaborne traffic (6% up annually), capacity limits for both the Suez and Panama Canals may be reached as soon as by the middle of the century. It is mostly a question of building ice-reinforced container ships. Estimations show that year-round transit costs on the Western Europe-Far East direction via the NSR may be lowered by 15% in comparison with the Suez Canal Route by the end of the 21st century, and that the NSR may become more profitable even in winter time.

However, the Arctic Scenario discussions resulted in only a few believers that the North-East Passage really could make a difference until at least 2030, as it would call for large investments and still not be open for more than a short time during the year. The Northern Route is more likely to be used for the raw material markets in the Barents region, and that its development will be mainly driven by exploration of oil and gas fields in the Arctic Shelf. The Barents region is very rich in minerals and actually accounts for large parts of the total raw materials market in Europe. Given that, the processing industry can move closer to the North (also northern BSR), and thereby reduce vast transportation of raw materials through the densely populated and congested areas in Europe. But, there is one important shortcoming for this. The lack of qualified labour in the very thinly populated North.

At the same time, as the European economic centre of gravity is moving towards Eastern European countries, there is some potential for the Baltic Sea region in connecting them to the Russian Arctic ports and the Northern Sea Route. Here, the BSR could serve both internal and intercontinental flows. Yet, the ports in northern Russia – like Murmansk and Arkhangelsk – are in need of expensive infrastructure upgrades. Besides its natural dependence on the pace of climate change the Northern Sea Route is also very much determined by the flexibility of shipping companies and Russian politics. Moreover, legal status of the passage will definitely need to be established, soon.

Prepare for future volumes

As of today, the NSR is relatively treated as a part of the Baltic Sea Gateway Scenario – where the ports in the region serve as a vital link in European trade with Russia and East Asia. According to Kirsi-Maarit Poljatschenko, General Manager of Hyundai Merchant Marine Finland, about 70% of Russia's incoming cargo goes via the Baltic Sea today. However, the ports face competition on the gateway, national and domestic levels, which is not only about geography and the service quality, but very much about politics. "Russia will set the speed and the Russian middle class will set the volume," Poljatschenko says. First and foremost, Russia will still be in the focus as a rich source of raw materials and its politics will concentrate on energetic resources. Centralization will still be strong and controlled by Moscow. On the other hand, social transformations in Russia will have a strong effect on the economy. Firstly, Russian youth is looking at their Western counterparts and wish for better mobility, and that is undoubtedly something that is harder to come by in Russia. Secondly, the middle class is growing rapidly and this means that they will be leading decision making, by choosing what they want to buy in the future.

Experts assume an increasing role for the White Sea port in Arkhangelsk, as it seems better connected than St. Petersburg (also in light of the Arctic route). However, St. Petersburg will keep a key role in the southern Baltic. Kaliningrad's function might be limited to the local market, as it has problems with transit due to the politically complicated situation. Improvement of the currently weak rail-road system, safety and security issues is likely to come in the near future, but green transport is certainly not yet on the agenda in Russia.

Even though the Europe-Asia continental landbridge has been a tempting way for years, Wang Peng of COSCO R&D department expresses his concerns about its future, pointing high costs (2-3 times more than the sea way), unclear custom procedures, poor safety and cargo tracing information as the main obstacles. However, there surely is a potential in this corridor, if we improve transnational cooperation on border crossings, customs and inspection systems, and work on coordinated international train paths. Infrastructure investments should focus not only on Russia and other CIS countries, but also on the eastern parts of the BSR – in order to bring them up to the same standards as in the West. Certification and continuous standards should further improve functionality of the system.

The East-West freight corridors also depend very much on politics. The political agenda in China, Kazakhstan and Russia will again most likely set the rules. If a lack of capacity on the Trans-Siberian railway lasts long enough, it can lead to a boost of the Arctic Scenario.

In general, future cargo routings, whether via the Arctic Sea, traditional oceanic routes or the East-West landbridge, depend on the cost differences and scale of restrictions on their way. It seems like the Green Scenario favours a situation with fewer corridors having more and more traffic, and bigger, multifunctional ports/transshipment hubs (both sea and dry) that will seamlessly connect sea, rail and road modes, and with the steering tools at hand like fees and taxes (or tax exemptions) – it will influence the market heavily. But – if and when will Russia go green?

Helena Kyster-Hansen, Piotr Trusiewicz

Managing empty containers

Folding boosts efficiency

Photo: Holland Container Innovations B.V.

Embedded within the EU project TransBaltic, Hamburg University of Technology investigates empty container management in the Baltic Sea region (BSR), aiming to provide deeper insights on this issue in general as well as to introduce foldable containers as a sustainable and innovative logistics solution.

The share of empty containers worldwide is estimated to be around 20% at sea and 40% on land of all containers transported. This is mainly due to an imbalance in cargo flows and the resulting compensational transports of empty containers between surplus and shortage areas in the transport chain. The repositioning of empty containers causes high costs (around USD 33 bln worldwide in 2008) and ties up transport and storage capacities. In addition to transportation on the sea leg, empty containers also have to be transported at the land leg, i.e. from the storage place to the shipper as well as from the consignee to the container storage place. Those empty trips via sea and land cause negative environmental impacts, e.g. in terms of air pollution or land use. Also, the repositioning of empty containers is associated with additional handling processes and requires storage space in terminals and container depots. The variety of different activities related to the management of empty container flows suggests that a vast number of players along the transport chain is facing the empty container problem. In principle, everyone who handles or owns containers is affected: ports, terminal and hinterland operators, shipping lines and other transport operators, shippers and consignees as well as container leasing companies. Thereby, the type and degree of negative impact varies among different stakeholders.

Relevance for the BSR

In the last decade, a significant growth in container flows can be observed in the BSR. Mainly caused by the positive economic development of the whole region and the containerization of cargo flows, the amount of handled containers increased to 7.6 mln TEU in 2007. This equals a growth of 250% in total container turnover between 2000 and 2007, with an annual growth rate of approximately 13%. Despite the economic crisis, which has extenuated this development

since 2008, recovery is expected for the region in the next few years.

Taking a closer look at empty containers, it can be stated that worldwide and in the EU the share is stable around 20% considering the last three years. In the BSR such figures reveal a different picture: whereas empty containers in the BSR ports (excl. Russia) shared around 25%, empty containers amounted to nearly 30% of all containers transported on container routes between European countries and Russian Baltic Sea ports. These imbalances mainly originate from the fact that imports of containerized cargo exceed exports in these countries.

In summary, empty container management is an important issue in the BSR with certain implications. On the one hand, it is relevant from the perspective of the region's more than forty container ports and their hinterland, but also for operating feeder lines and other actors, that are facing the resulting economic, environmental and social impacts. Additionally, this issue has a spatial dimension as repositioning takes place, e.g. between Europe and Asia (global dimension), between ports in the BSR (regional) as well as between terminals and depots in the port area (local). For the BSR in particular, the regional dimension of repositioning is inevitably linked to the diversity of the region regarding sources and sinks of cargo flows (i.e. the hubs) as well as the corridors, which together build up the transport network on which the repositioning of empty containers takes place.

Status quo of optimization strategies

There are several optimization strategies to reduce the repositioning of empty containers. One of them is organizational measures, aiming to reduce the amount of empty containers by reorganizing the flows of empty containers (e.g. container pooling, balancing out the imbalances by searching actively for return cargo). Another possibility is to channel the flows of empty containers by pricing measures: e.g. giving incentives for desired drop areas to avoid shortages of empty containers there or imposing a freight rate surcharge on the transport leg with higher demand for compensation of repositioning. A different approach is the use of information and communication technology (ICT) to improve container flows by making it more transparent, such as virtual container yards, tracking and tracing systems, etc. Nevertheless, movements of empty containers cannot be avoided completely by all those measures due to the existing trade imbalances.

A foldable solution

The foldable container provides an opportunity to fill this gap, as the main principle is to reduce the volume by folding the container when it is empty. A bundle of it can then be handled as one standard container. Thereby less storage space is needed and unproductive transportation is avoided, which leads to significant cost reduction and environmental benefits.

Past attempts to put the foldable container into practice in the last decades were made, but none succeeded in introducing it to the market place. Research findings identified several reasons for failure, such as higher than expected costs for folding and unfolding, susceptibility to damage and theft, a high purchase price, lack of integration capacity into existing logistic chains and a high tare weight. Therefore, especially technological requirements and affordability will decide on the foldable container's market success and should be guiding criteria for future designs. Currently, there are several development projects, e.g. in India, China, Germany and the Netherlands.

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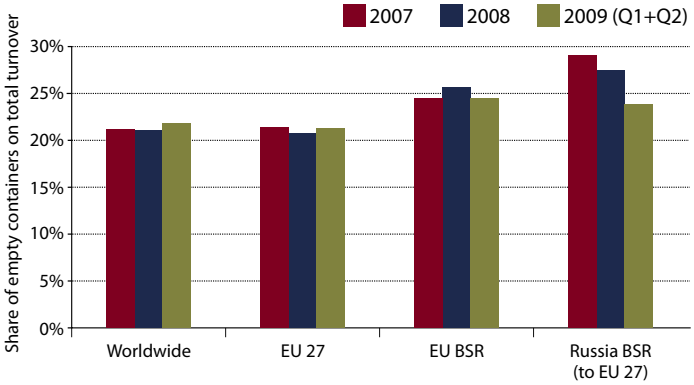
Hamburg University of Technology's (TUHH) role focuses on being the leader of a work package dealing with empty container management. Support in terms of knowledge and access to business and research networks is provided by the project group and task partners.

The main goal of the task is to implement foldable containers in the BSR to reduce negative impacts of empty container flows. A survey on empty container management in the BSR will be conducted in 2010 to create transparency on the topic. A questionnaire has already been sent out to different groups of actors along the container transport chain to clarify their experiences with empty container management, to understand the pursued strategies and to evaluate the success of applied measures. The results of this multi-actor analysis will be published as part of a manual on empty container management at the end of 2010.

Also, the initiation and preparation phase of implementing the foldable in the BSR is proceeding. Hamburg University of Technology has therefore formed a cooperation with Holland Container Innovations (HCI) and Delft University of Technology. HCI has developed and patented technologies for a foldable container. The next step will be to set up a pilot case, where the foldable container will be tested in a real business environment. For this purpose, we invite companies to participate that are willing to contribute by operating foldable containers in their business processes.

Picture 1. Share of empty containers in total container turnover



Source: Eurostat (2010). Database Maritime Transport (Table: goods, main ports, containers). Retrieved April 19, 2010, from http://epp.eurostat.ec.europa.eu

Picture 2. The foldable container

	2007	2008	2009 (Q1+Q2)
Worldwide	21.0%	20.8%	21.7%
EU 27	21.0%	20.3%	21.0%
EU BSR	24.4%	25.7%	24.4%
Russia BSR (to EU 27)	29.0%	27.5%	23.8%